

## CLAIMS

What is claimed is:

1. Communication apparatus comprising:
  - a receive antenna for receiving communications signals of interest and unknown narrow-band interfering signals;
  - a downconverter coupled to the receive antenna;
  - 5 a signal clock recovery circuit coupled to an output of downconverter;
  - a sampling circuit coupled to an output of the downconverter and to an output of the signal clock recovery circuit for providing an oversampled signal containing the communications signals of interest and unknown narrow-band interfering signals;
  - 10 a blind narrow-band interference canceller coupled to an output of the sampling circuit for filtering the communications signals of interest and unknown narrow-band interfering signals to produce an output that is statistically white containing most of the signal of interest, and a small portion of the interference, and for locking on to the desired signal of interest; and
  - 15 a symbol decoding circuit coupled to an output of the interference canceller for outputting the communications signals of interest without interference.
2. The apparatus recited in Claim 1 wherein the blind narrow-band interference canceller comprises:
  - a prediction-error filter;
  - a filter adaptation circuit coupled to an output of the prediction-error filter and to
  - 5 the sampling circuit for adapting the filter;
  - a mixer having a first input coupled to an output of the prediction-error filter;
  - a carrier tracking loop having an input coupled to an output of the mixer and having an output coupled to a second input of the mixer; and
  - an adaptive decision-feedback equalizer coupled to an output of the mixer.
3. The apparatus recited in Claim 1 further comprising:
  - a second receive antenna for receiving the communications signals of interest and the unknown narrow-band interfering signals;
  - a second downconverter coupled to the second receive antenna; and
  - 5 a multiplexer having inputs coupled to the downconverters and having an output coupled to the blind narrow-band interference canceller.

4. A communication method comprising the steps of:
  - receiving input signals comprising communications signals of interest and unknown narrow-band interfering signals;
  - oversampling the signals of interest and interfering signals to produce signals
- 5 contain a statistically white component comprising the signals of interest and a correlated component comprising the interfering signals;
  - adaptively filtering the oversampled signals
  - equalizing the adaptively filtered signals to lock on to the desired signal of interest.
5. The method recited in Claim 4 wherein the oversampling step comprises spatially oversampling the signals of interest and interfering signals.
6. The method recited in Claim 4 wherein the oversampling step comprises temporally oversampling the signals of interest and interfering signals.
7. The method recited in Claim 4 wherein the adaptive filtering step comprises adaptively filtering the oversampled signals using an adaptively formed prediction-error filter that is computed using correlation statistics of the oversampled signal to produce an output that is statistically white containing most of the signal of interest, and a small
  - 5 portion of the interference.
8. The method recited in Claim 4 wherein the equalizing step comprises equalizing the adaptively filtered signals an adaptive decision-feedback equalizer to lock on to the desired signal of interest.